SUPPORT FOR THE AMENDMENT

Support for the amendment to claim 14 is found in claims 3-6, 10 and 14 as originally presented. Support for claim 20 is found in paragraph [0090] and Figure 1 of the specification. Support for claim 21 is found in paragraph [0094] of the specification. Support for claim 22 is found in claim 19 as originally presented and in paragraph [0037] of the specification. Support for claim 23 is found claim 18 as originally presented and in paragraphs [0037] and [0098] of the specification. Support for claim 24 is found in claim 19 as originally presented and paragraph [0067] of the specification. No new matter would be added to this application by entry of this amendment.

Upon entry of applicants' amendment, claims 1-21 will now be active in this application with claims 14-16 and 20-24 being under active consideration.

REQUEST FOR RECONSIDERATION

The claimed invention is directed to a laser marking method of a rubber-reinforced thermoplastic resin.

Laser marking techniques of molded articles have been reported and can provide for revealing an embedded coloring material by discoloring a colorant through laser beam irradiation. Marking of rubber-reinforced thermoplastic resins can present interesting challenges due to the propensity of such resins to foam when irradiated with laser light.

The claimed invention provides for a laser marking method of a rubber-reinforced thermoplastic resin by irradiating a molded article with two or more laser beams having different energy, wherein a composition for multicolor laser marking comprises a chromatic coloring agent of specified structure and properties and a black substance which is depleted or discolored by laser beam. Applicants have discovered that laser marking of such a rubber-reinforced thermoplastic resin provides for a vivid marking, in-part due to the foaming properties of the rubber-reinforced thermoplastic resin. Such a method is nowhere disclosed or suggested in the cited art of record.

The rejection of claims 14-16 under 35 U.S.C. §103(a) over Boissonnet U.S. 2002/0089092, now U.S. 6,689,542 is respectfully traversed.

Boissonnet fails to disclose or suggest a laser marking method of a rubber-reinforced **thermoplastic** resin.

Boissonnet describes a composition comprising two coloring agents in an elastomer. An organic pigment as a "coloring agent" and in particular a copper phthalocyanie having a phthalocyanine backbone is described in paragraph [0049]. A red pigment (Ciba DPP DP, having a diketo-pyrrolo-pyrrole backbone in used in an example [0060]. The elastomer is produced by vulcanization with sulfur as a crosslinking agent [0057] and [0064]. There is no

disclosure or suggestion of a rubber-reinforced **thermoplastic** resin, a resin which can foam when irradiated with laser light.

In contrast, the claimed method is directed to a laser marking method of a rubber-reinforced **thermoplastic** resin. Applicants note that the claims have been amended to recite the specific material of a rubber-reinforced thermoplastic resin. When irradiated with laser light, such a polymer can form a foaming part, having a different refractive index than that of the non-irradiated portion. Such a contrast in refractive index provides for a highly vivid marking as described in paragraph [0037] of applicant's specification. As the cited reference fails to suggest the claimed rubber-reinforced thermoplastic resin, the formation of a foam upon laser irradiation is not suggested and therefore the enhancement in vivid marking is not suggested.

Furthermore, there would have been no motivation to use a rubber-reinforced thermoplastic resin in the laser marking method of Boissonnet.

Boissonnet describes their method as one which "**does not cause apparent degradation** to the condition of the surface of the marked article" [0010]. The process achieves marking "**without removing material** visible to the naked eye (and thus **without an adverse effect** on the condition of the surface)" [0011]. Thus, the reference is clear as to the lack of a visible effect of the marking method upon irradiation.

In contrast, the claimed rubber-reinforced thermoplastic resin is subject to foaming at the cite of irradiation. One can appreciate that irradiation with laser light can cause thermal deformation of a thermoplastic material, allowing for expansion and therefore foam formation. Such foam formation would appear to be contrary to the method described by Bossonnet in which the surface does not suffer from any apparent degradation, without removing material visible to the naked eye and without an adverse effect on the condition of the surface. Since foaming would be visible to the naked eye the change to the condition of

the surface would be immediately apparent and therefore, a rubber-reinforced thermoplastic resin would not be obvious to use in the laser marking process of Boissonnet.

Furthermore Boissonnet does not describe any technical relationship between the backbone and the exothermic peak of the colorant and coloring properties. Therefore, the advantages of using a coloring agent having a specific backbone and an exothermic peak could not be suggested.

A review of tables 1 and 2 of applicant specification, and in particular comparative Examples A-3 and A-4 illustrates an adverse affect relative to the exothermic peak and the claimed range. Tables 5 and 9, comparative examples B-2, B-3, B-5 and B-6 illustrates the results wherein the coloring agent has no exothermic peak. Since the relationship between backbone and exothermic peak is not described, the claimed method would not have been obvious.

Claim 20

This embodiment of the claimed invention is directed to irradiation in different portions of the molded article.

Boissonnet describes irradiation of the first portion formed upon the first laser irradiation with the second laser beam (claim 1) and that the second portion which is different in color tone from the first portion is created by the interaction with the coloring agent. Thus there is clearly no suggestion of irradiation in different portion of the molded article as recited in claim 20.

Claim 21

This embodiment of the claimed invention is directed to using only one type of chromatic coloring agent.

Boissonnet requires the use of at least two coloring agents (claim 1). A color is obtained by blending the coloring agents and a color is obtained by interaction there between (e.g. bind from red pigment and white pigment). Accordingly, it would not be obvious to use a single chromatic coloring agent, as recited in claim 21.

Claim 22

This embodiment of the claimed invention is directed to an embodiment where the marked portion is foamed by irradiation.

Boissonnet fails to describe formation of a foam upon irradiation. Laser light merely results in a discoloration of black and red pigments and no foaming is suggested. Further, the use of vulcanized rubber and the preclusion of surface alteration would preclude foaming from being obvious.

Claim 23

This embodiment of the claimed invention is directed to the use of foaming to create a white color tone.

Boissonnet describes that the subject marking method merely provides coloring patterns of tow or more different color s (see claims). The coloring patterns are composed of a color obtained by blending the coloring agents and a color obtained by the interaction there between. Thus, the reference views it as necessary to include white pigment (e.g TiO_2) [0047] and [0060] in order to obtain a while coloration. There is no suggestion to use foaming as a source of white coloration as recited in claim 23.

Claim 24

This embodiment of the claimed invention is directed to a method in which the molded article further comprises a white-based substance in an amount of only 0.001 to 1 part by mass.

Boissonnet does not quantify the content of white-based substance. However, in the examples the content is quite large (100 parts by mass [0060]). Since the reference fails to identify foaming as a source of white coloration, it would not have been obvious to use an amount of only 0.001 to 1 part by mass of a white-based substance, as recited in claim 24.

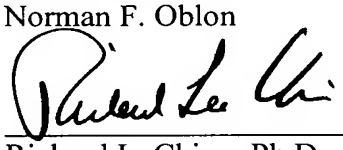
In view of the deficiencies of the cited reference to disclose or suggest laser marking of a rubber-reinforced thermoplastic resin, the claimed invention is not rendered obvious by the cited reference and withdrawal of the rejection under 35 U.S.C. §103(a) is respectfully requested.

The provisional rejection of claims 1-6, 8,l 10-11 and 14-18 on the grounds of nonstatutory obviousness-type double patenting over claims 1-4, 6 and 8 of co-pending application 11/889,207 is noted. A copy of the office action dated August 5, 2009 issued in U.S. 11/889,207 is attached. Applicants confirm that the assignee of the above-identified application is identical with the assignee of U.S. 11/889,207. Applicants further note that applicants' PCT filing date of JP 05/00312 of January 13, 2005 is before the PCT filing date of U.S. 11/880,207 of February 10, 2006 such that issuance of the above-identified application would not result in an undue extension of patent term relative to any patent issuing from U.S. 11/889,207. Accordingly, applicants respectfully request that the provisional rejection be deferred and addressed during prosecution of the later filed application, U.S. 11/889,207.

Applicants submit that this application is now in condition for allowance and early notification of such action is earnestly solicited.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, L.L.P.
Norman F. Oblon



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/889,207	08/09/2007	Kazuyoshi Kawakami	ARC-1417-588	9672

23117 7590 08/05/2009
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EXAMINER	
CHEN, VIVIAN	
ART UNIT	PAPER NUMBER
1794	

MAIL DATE	DELIVERY MODE
08/05/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

DOCKETED
DUE DATE Nov 5, 2009
FINAL DEADLINE Febr. 5, 2010
DOCKETED BY MP CS

Office Action Summary	Application No.	Applicant(s)	
	11/899,207	KAWAKAMI ET AL.	
	Examiner	Art Unit	
	Vivian Chen	1794	

– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is FINAL. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-8 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-8 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date 4/15/2009.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-2, 4-5, 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over:

FENG ET AL (US 5,977,514),

in view of MCKILLIP (US 5,340,628) and SHINMOTO ET AL (US 5,897,938).

FENG ET AL '514 discloses a laser markable material capable of producing multi-colored designs, wherein the material comprises a thermoplastic polymer (e.g., polyacrylates and copolymers thereof), a laser energy absorbing additive (e.g., carbon black) in typical amounts of 0.044-0.41 wt% and a coloring agent of typical amounts of 0.4-2.27 wt%. (entire document, e.g., line 10, col. 7 to line 22, col. 8; Table 1; etc.) However, the reference does not explicitly disclose a transparent thermoplastic layer.

MCKILLIP discloses that it is well known in the art to apply a clear polyester film to a laser markable sheet in order to prevent contamination from the marking process. (line 10-19, 30-49, col. 2)

SHINMOTO ET AL discloses that it is well known in the art to apply a clear polymer layer on laser markable material in order to provide protection from wear and environmental conditions. (line 27-45, col. 6)

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply a highly transparent protective polymer layer (claim 1) to the surface of the laser markable material of FENG ET AL '514 in order to prevent the release of residual particles and/or to provide protection for markings, while avoiding interference with the laser marking process. One of ordinary skill in the art would have formed laser markable material into conventional plastic articles (e.g., films, sheets, etc.) (claim 7).

3. Claims 3, 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over:

FENG ET AL (US 5,977,514), in view of MCKILLIP (US 5,340,628) and SHINMOTO ET AL (US 5,897,938),

as applied in claim 1-2 above,

and further in view of ITO ET AL (US 2002/0052438).

ITO ET AL discloses that it is well known in the art to utilize thermoplastic resin compositions containing rubber-grafted acrylic resins order to form durable materials capable of developing highly colored laser marks. The reference also discloses that it is well known in the art to form laser markable materials into films and sheets. (paragraphs 8-11, 38, 55-69, 91)

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a known acrylic-based copolymer as disclosed in ITO ET AL as the resin matrix for the colored laser marking materials of FENG ET AL '514 in order to produce

durable articles with multi-toned chromatic markings and desirable physical and mechanical properties.

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over:

FENG ET AL (US 5,977,514), in view of MCKILLIP (US 5,340,628) and SHINMOTO ET AL (US 5,897,938);

as applied to claim 1 above,

and further in view of ULLMANN'S ENCYCLOPEDIA OF INDUSTRIAL CHEMISTRY (ULLMANN'S).

ULLMANN'S discloses that it is conventional in the art to incorporate slip or antiblocking particles in polymeric films (e.g., polyester, etc.) in order to improve handling properties and surface characteristics. (section 3)

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use effective amounts of known anti-blocking treatments to the protective layer on a laser markable laminate in order to reduce surface friction and handling properties.

5. Claims 4, 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over:

FENG ET AL (US 5,977,514), in view of MCKILLIP (US 5,340,628) and SHINMOTO ET AL (US 5,897,938) and ULLMANN'S;

as applied to claim 1, 5 above,

and further in view of MORI ET AL (US 5,095,089).

MORI ET AL discloses that it is well known in the art to use thermoplastic copolyesters comprising 15-85 mol% 1,4-cyclohexanedimethanol to form heat-resistant plastic articles with good clarity retention. (line 10-35, col. 1).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use known copolyesters as disclosed in MORI ET AL for a protective layer for the laser markable materials of FENG ET AL '514 in order to produce laminates with enhanced heat resistance and retention of clarity.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vivian Chen whose telephone number is (571) 272-1506. The examiner can normally be reached on Monday through Thursday from 8:30 AM to 6 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho, can be reached on (571) 272-1123. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

The General Information telephone number for Technology Center 1700 is (571) 272-1700.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

July 31, 2009

/Vivian Chen/
Primary Examiner, Art Unit 1794

Notice of References Cited	Application/Control No. 11/889,207	Applicant(s)/Patent Under Reexamination KAWAKAMI ET AL.	
	Examiner Vivian Chen	Art Unit 1794	Page 1 of 2

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-5,977,514	11-1999	Feng et al.	219/121.69
*	B	US-2002/0052438	05-2002	Ito et al.	524/431
*	C	US-5,095,089	03-1992	Mori et al.	528/272
*	D	US-5,340,628	08-1994	McKillip, Barron G.	428/41.3
*	E	US-7,459,259	12-2008	Engel et al.	430/270.1
*	F	US-6,976,411	11-1999	Feng et al.	252/301.36
*	G	US-7,033,677	04-2006	Buach et al.	428/515
*	H	US-6,284,184	09-2001	Choi et al.	264/400
*	I	US-7,041,381	05-2006	Raap et al.	428/523
*	J	US-6,187,390	02-2001	Seeger et al.	427/555
*	K	US-2007/0080148	04-2007	Stockum et al.	219/121.6
*	L	US-2003/0035935	02-2003	Wachi et al.	428/195
*	M	US-4,847,181	07-1989	Shimokawa, Kiyofumi	430/297

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
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	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Notice of References Cited	Application/Control No. 11/889,207	Applicant(s)/Patent Under Reexamination KAWAKAMI ET AL.	
	Examiner Vivian Chen	Art Unit 1794	Page 2 of 2

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-5,897,938	04-1999	Shinmoto et al.	428/354
*	B	US-5,760,120	06-1998	Itoh et al.	524/431
*	C	US-2005/0137296	06-2005	Ryoo et al.	524/088
*	D	US-2004/0034142	02-2004	Kawakami et al.	524/417
*	E	US-2004/0132892	07-2004	Kawakami et al.	524/495
*	F	US-5,215,825	06-1993	Hiraoka et al.	428/480
*	G	US-6,761,969	07-2004	Li et al.	428/354
*	H	US-6,503,620	01-2003	Xie et al.	428/354
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

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	S					
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Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Receipt date: 04/15/2009

11889207 - GAU: 1794

INFORMATION DISCLOSURE CITATION

(Use several sheets if necessary)

ATTY. DOCKET NO.	SERIAL NO.
1417-588	11/889,207
APPLICANT	
KAWAKAMI et al.	
FILING DATE	**GROUP**
August 9, 2007	1714

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
		20030035935 A1	2/2003	Waohl et al			
		5089372 A	2/1992	Kirihata et al			
		6,482,768 B1	11/2002	Yoshinari et al			

FOREIGN PATENT DOCUMENTS

		DOCUMENT	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES	TRANSLATION NO
		2001-302872	10/2001	JP			ABSTRACT	
		WO 2004/113090 A1	12/2004	PCT				
		1 228 893 A2	8/2002	EP				
		0 258 836 A2	3/1988	EP				

OTHER DOCUMENTS (including Author, Title, Date, Pertinent pages, etc.)

*Examiner	/Vivian Chen/	Date Considered	08/02/2009

Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Initial this form with next communication to applicant.

1465

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /VC/